Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims

Claims 1–36 (canceled)

Claim 37 (currently amended): A method of processing sulfide minerals and concentrates by oxidation of sulfide minerals in an aqueous medium using an oxidizing agent which is one or more of nitric acid, nitrous acid and their oxides, the method comprising:

subjecting in an oxidation reactor a slurry containing the sulfide minerals to oxidation under agitation and under controlled conditions of slurry acidity using the oxidizing agent which is one or more of nitric acid, nitrous acid and their oxides;

forming in the oxidation reactor a sulfuric acid as a result of the sulfide oxidation;

constantly neutralizing the sulfuric acid in the oxidation reactor using an acidity neutralizer to an acidity level at which no formation of elementary sulfur occurs;

removing of heat released during the sulfide oxidation from the oxidation reactor;

transferring NO from the oxidation reactor into a regeneration oxidizer;

regenerating N_2O_3 from the transferred NO using air or oxygen in the regeneration oxidizer; and

transferring the regenerated N_2O_3 into the oxidation reactor;

wherein the temperature in the oxidation reactor is maintained in a range from 20 to 90 °C and

wherein a liquid-to-solid ratio in the slurry in the oxidation reactor is between 1:1 to 5:1.

Claim 38 (previously presented): The method according to claim 37 in which the acidity neutralizer is one or more of $CaCO_3$, $MgCO_3$, $Ca(OH)_2$, CaO, NaOH and $CaHPO_4$.

Claim 39 (currently amended): The method according to claim 37 in which the temperature in the oxidation reactor is maintained in the range of 65-85°C.

Claim 40 (currently amended): The method according to claim 37, further comprising

before transferring the regenerated N_2O_3 into the oxidation reactor, separating the N_2O_3, formed in said method, from N_2 by absorbing the N_2O_3 from a mix of gases comprising N_2 and N_2O_3 into a sulfuric acid solution which has a concentration in the range 75-98%; and

~~denitrating~~ releasing N_2O_3 from the sulfuric acid solution thermally by heating it to a temperature not exceeding 250°C, and/or chemically by introduction of a denitrating substance.

Claim 41 (previously presented): The method according to claim 40, in which the denitrating substance is one or more of an alcohol, formaldehyde and other chemical reducing agents.

Claim 42 (previously presented): The method according to claim 37, further comprising

separating the NO, formed in said method, from N_2 by absorbing the NO from a mix of gases comprising N_2 and NO into a monovalent copper salt solution;

denitrating the monovalent copper salt solution using a dosed supply of compressed air, with optional simultaneous heating of the solution.

Claim 43 (previously presented): The method according to claim 42 in which the monovalent copper salt solution contains a stabilizing agent to impede oxidation of copper from monovalent to bivalent.

Claim 44 (previously presented): The method according to claim 43 in which the stabilizing agent is one or more of tributyl phosphate, adipodinitrile, or reducing agents such as formaldehyde or hydrazine.

Claim 45 (canceled)

Claim 46 (previously presented): The method according to claim 37, wherein the regenerating the N_2O_3 from the NO formed in said method is performed using pure oxygen in an individual regeneration oxidizer and at a temperature of 15-25°C.